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Japan's 2011 Earthquake and Tsunami: Food and Agriculture Implications

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Summary

The March 11, 2011, earthquake and tsunami in Japan caused widespread devastation that affected many of the country's agricultural and fishery areas. The nuclear crisis that followed at the Fukushima Daiichi Nuclear Plant, and the subsequent detection of radioactive contamination of food produced near the disabled facility, further raised fears about the safety of Japan's food production systems and its future food exports. Most reports acknowledge that Japan's current production and supply shortages, along with rising food safety concerns and possible longer-term radiation threats to its food production, could limit Japan's food exports while possibly increasing its need for food imports in the future. It is still not clear what effect, if any, Japan's current food supply and demand situation will have on world farm commodity markets and food prices.

Following initial reports about possible radioactive contamination of foods, many countries increased their surveillance of food imports from Japan. In addition to the United States, others imposing heightened surveillance measures include the European Union, Canada, Australia, New Zealand, India, and most Asian nations, such as China and Hong Kong, Indonesia, Malaysia, Singapore, Korea, and Thailand, among others. Import restrictions vary by country but broadly cover milk and milk products, vegetables and fruit, and seafood and meat from those prefectures with a perceived risk of contamination, specifically Fukushima, Ibaraki, Tochigi, and Gunma. Several international organizations, including the various organizations of the United Nations, are closely monitoring global concerns about the safety of foods produced in Japan.

The Japanese government has taken steps to monitor and restrict, if necessary, the distribution of contaminated foods. Testing has been conducted nearly daily to detect possible radioactive contaminants on a wide range of plant and animal products, including fish, and also tap water in some of the coastal prefectures as well as in southern prefectures near the disabled Fukushima facility. In March 2011, Japan's government made a series of announcements restricting the distribution and consumption of certain vegetables harvested in Fukushima, Ibaraki, Tochigi, and Gunma prefectures, and fresh raw milk produced in Fukushima prefecture. In April 2011, there were additional announcements regarding possible contaminated fish products, and also an announcement restricting spinach and leafy greens from Chiba prefecture.

In the United States, the two principal agencies that regulate U.S. food imports—the Food and Drug Administration (FDA) and the U.S. Department of Agriculture (USDA)—have taken steps to address these concerns. Following Japan's announcement that some foods had been contaminated by radiation, FDA issued "Import Alert 99-33" for milk, vegetables, and certain fish species (sand lance) produced or manufactured in selected Japanese prefectures. Both FDA and USDA have announced that they are taking extra steps to better track U.S. food imports from Japan, working in conjunction with existing border inspectors at the Department of Homeland Security's U.S. Customs and Border Protection (CBP).

Other U.S. agencies are also addressing concerns about whether radiation from Japan might affect food production in the United States or in U.S. territories in the Pacific. The Environmental Protection Agency (EPA) is continuously monitoring the nation's air and is regularly monitoring drinking water, milk, and precipitation for environmental radiation. To date, the results of EPA's sampling and monitoring have shown detected radiation below levels that are a public-health concern.

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Introduction

The widespread devastation from the March 11, 2011, earthquake and tsunami affected many agricultural and fishery areas in Japan. In addition, detected radioactive contamination of food produced near the disabled Fukushima Daiichi Nuclear Plant has raised fears about the safety of Japan's food production systems and its future food exports. Many countries have increased their surveillance of food products from Japan, and the Japanese government has taken steps to monitor and restrict, if necessary, the distribution of contaminated foods. In the United States, the two primary agencies that regulate U.S. food imports—the Food and Drug Administration (FDA) and the U.S. Department of Agriculture (USDA)—have taken steps to address these concerns. Other U.S. agencies are also working to address this situation, as well as concerns about whether radiation leaks from Japan might possibly affect food production in the United States or U.S. territories in the Pacific.¹ Various international organizations, including those within the United Nations, are closely monitoring global concerns about the safety of foods produced in Japan.

Japan's Food Industry

Production

Japan's agricultural and fisheries industries account for a small share (less than 2%) of its total yearly GDP, but are an important part of the country's overall economy. Agricultural output, measured at the farm level, totals about \$70 billion annually.² The value of Japan's fisheries accounts for another \$14 billion.³ Principal food commodities produced in Japan include fish and seafood, rice, vegetables, fruits and nuts, and dairy and poultry products.⁴

Despite its size, Japan has roughly the same number of commercial farms as the United States—estimated at about 2 million. These farms are spread across an estimated 11.4 million acres of cultivated farmland (a fraction of that in the United States, estimated at more than 400 million acres).⁵ Japan's marine fisheries industry has about 115,200 business enterprises and another 6,500 “inland water” (aquaculture) operations.⁶

Trade

Japan is a net food importer (**Table 1**). Imports of agricultural and fisheries products totaled \$59.3 billion in 2010.⁷ Nearly half of the value of Japan's food imports consisted of fish and meat products. Other imports include grains and bakery goods (23% of total value), and vegetables and

¹ For more information, see CRS Report R41702, *Japan's 2011 Earthquake and Tsunami: Economic Effects and Implications for the United States*.

² Japan's Ministry of Agriculture, Forestry and Fisheries (MAFF), *84th Statistical Yearbook (2008-2009)*, http://www.maff.go.jp/%20e/tokei/kikaku/nenji_e/index.html; MAFF, “Summary of Agricultural Production,” http://www.maff.go.jp/e/tokei/kikaku/nenji_e/pdf/n0030e.pdf. Converted from yen to dollars (2007). By comparison, the farm value of U.S. agricultural products sold is about \$300 billion (Source: USDA, *Census of Agriculture*, 2007).

³ Ibid. MAFF, “Summary of Fishery Production,” http://www.maff.go.jp/e/tokei/kikaku/nenji_e/pdf/n0031e.pdf.

⁴ FAOSTAT Production, <http://faostat.fao.org/site/339/default.aspx>.

⁵ MAFF, “Summary of Agricultural Production,” http://www.maff.go.jp/e/tokei/kikaku/nenji_e/pdf/n0030e.pdf. 2008 data. Converted to acres (1 hectare = 2.47 acres). U.S. cropland is reported at 406.4 million acres (2007).

⁶ MAFF, “Summary of Fishery Production,” http://www.maff.go.jp/e/tokei/kikaku/nenji_e/pdf/n0031e.pdf. 2008 data.

⁷ Global Trade Atlas, <http://www.gtis.com/gta/>. Harmonized System (HS) codes in chapters 01-22. Excludes food waste (HS 23) and tobacco products (HS 24).

fruits (8%). The United States was the leading supplier, accounting for about one-fourth of food imports (\$14.1 billion in 2010). About half of the value of U.S. food exports to Japan consisted of cereal grains, including corn (\$3 billion in 2010, accounting for 30% of all U.S. corn exports).⁸ Other U.S. exports were seafood, meat and dairy products (21%), and fruits and nuts (5%).

Table 1. Japan's Agricultural Imports, Exports, and Net Trade, 2010

HS Category	Imports	Share	Exports	Share	Net Trade
	(\$ million)	(%)	(\$ million)	(%)	(\$million)
Fish and seafood	11,695	20%	1,292	28%	(10,404)
Animal and meat products	9,403	16%	142	3%	(9,262)
Prepared meat and fish	5,263	9%	655	14%	(4,608)
Fats and oils	1,309	2%	141	3%	(1,169)
Dairy, eggs, honey	1,334	2%	47	1%	(1,287)
Fresh fruits, vegetables	4,865	8%	141	3%	(4,724)
Grains, baking products	13,410	23%	711	15%	(12,698)
Sugar and Cocoa	1,826	3%	138	3%	(1,688)
Beverages, water	2,865	5%	368	8%	(2,497)
Prepared foods	3,006	5%	57	1%	(2,949)
Floriculture, spices, misc.	4,350	7%	1,001	21%	(3,348)
Total	59,326	100%	4,693	100%	(54,633)

Source: Compiled by CRS using Global Trade Atlas, <http://www.gtis.com/gta/>, "Reporting Total Import Statistics" and "Reporting Countries Export Statistics" (Japan).

Notes: Data are by Harmonized System (HS) code. Imports, actual U.S. dollars. Harmonized System (HS) codes in chapters 01-22. Excludes other agricultural categories: food waste (HS 23) and tobacco products (HS 24).

Japan's food exports totaled \$4.7 billion in 2010. Leading Japanese food exports included fish and other animal products (about 40%), processed foods, bakery products, and grains (about 15%), beverages (8%), and other miscellaneous products (**Table 1**). Food exports to the United States totaled nearly \$700 million in 2010, accounting for about 15% of Japan's total food exports. Exports to the United States consisted mostly of fish and animal products, processed bakery products and grains, and beverages.

Policy Priorities

The agricultural and food sectors are important and strategic aspects of Japan's government policies. Japan provides generous support to its agricultural sectors and protects its domestic producers by imposing high tariffs on most imported foods. The Organisation for Economic Co-operation and Development (OECD) estimates that Japan provides substantial government support for its domestic farmers—estimated at more than \$46 billion in 2009—ranking Japan

⁸ CRS, using USITC data, <http://www.dataweb.usitc.gov>. By U.S. Harmonized Tariff Schedule (HTS) code, includes corn (HTS 1005). Other grain exports were: sorghum, HTS 1007 (\$127 million, 17% of U.S. exports) and barley, HTS 1003 (\$2.8 million, 7% of U.S. exports in 2010).

second behind the European Union (EU) in terms of total governmental farm spending among developed countries.⁹

Japan's current agricultural policy plan (Food, Agriculture and Rural Areas Basic Plan) "addresses wide-ranging policy change by designating food, agriculture and rural areas governance as a national strategy."¹⁰ One of the plan's principal goals is to raise Japan's self-sufficiency in food production from an estimated 40% in recent years to 50% by FY2020.¹¹ Food self-sufficiency is reported to be greater in some prefectures. The five coastal prefectures that were most affected by earthquake and tsunami had a reported high food self-sufficiency ratio: Aomori (119%); Iwate (104%); Miyagi (80%); Fukushima (85%); and Ibaraki (70%). It is unclear how the recent devastation to these areas will affect the region's food self-sufficiency.

Estimated Damages

The widespread devastation from the March 2011 earthquake and tsunami affected many agricultural and fishery areas in Japan. Most reports acknowledge that Japan's current production and supply shortages, along with rising food safety concerns and possible longer-term radiation threats to its food production, could limit Japan's food exports while possibly increasing its need for food imports in the future.¹² It is still not clear what effect, if any, Japan's current food supply and demand situation will have on world farm commodity markets and food prices.

Potential Production Losses

Japan's assessment of the damages to the fisheries, agriculture, and forestry sectors from the March 2011 earthquake is currently estimated at \$21.5 billion.¹³ Of this estimated total, \$11.0 billion is attributed to losses in Japan's fisheries sector, along with \$9.1 billion in damages to agricultural lands and crops, and another \$1.4 billion in damages to forested lands and facilities.

Damages to agricultural crops, land, and facilities have been reported in several prefectures, including Aomori, Iwate, Miyagi, Akita, Yamagata, Fukushima, Ibaraki, Tochigi, Gunma, Saitama, Chiba, Kanagawa, Yamanashi, Nagano, Niigata, and Mie, among others (**Figure 1**).¹⁴ Damages to the agriculture sector cover nearly 4,700 farmland areas and about 16,400 food facilities.

⁹ OECD, *Agricultural Policies in OECD Countries, at a Glance*, 2010, Table 1.3. Based on estimated 2009 Producer Support Estimate (PSE). Other leading countries: EU (\$121 billion), U.S. (\$31 billion), Korea (\$18 billion). Additional information is provided in CRS Report R41713, *U.S. and EU Agricultural Support: Overview and Comparison*.

¹⁰ MAFF, *FY2009 Annual Report on Food, Agriculture and Rural Areas in Japan*, March 2010, http://www.maff.go.jp/e/%20annual_report/2009/pdf/e_all.pdf.

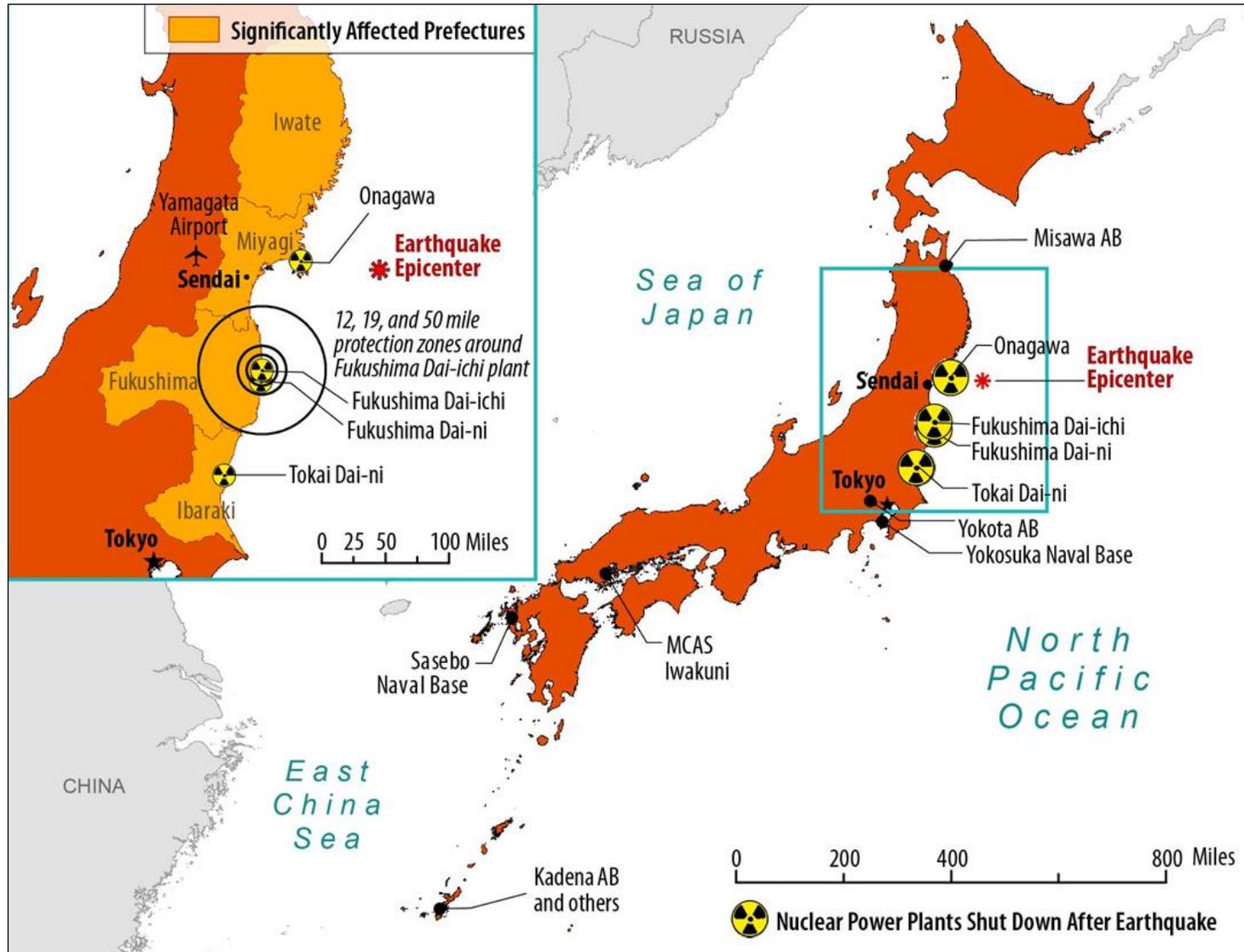
¹¹ *Ibid.*, pp. 10-20. This ratio is based on a supplied calorie basis.

¹² See, for example, Rabobank Food & Agribusiness Research and Advisory (FAR) Group, "Japan Earthquake: Magnitude of Impact on Food and Agriculture," March 2011, and *Kiplinger Agriculture Letter*, March 11 and 25, 2011.

¹³ MAFF, "The Damages caused by the Great East Japan Earthquake and Actions taken by Ministry of Agriculture, Forestry and Fisheries," May 16, 2011, http://www.maff.go.jp/e/quake/press_110511-1.html. Reported at 1,752.2 billion yen.

¹⁴ MAFF, "The Damages caused by the Great East Japan Earthquake and Actions taken by Ministry of Agriculture, Forestry and Fisheries," May 16, 2011, http://www.maff.go.jp/e/quake/press_110511-1.html.

Figure I. Map of Affected Areas, Japan



Source: Prepared by CRS based on data from the U.S. Department of State, National Geospatial Intelligence Agency, and GeoCommons.

Among fisheries, “catastrophic damages” to fish vessels and harbor facilities have been reported in Iwate, Miyagi, and Fukushima prefectures; other damages to fishing vessels and harbor facilities were also reported in Hokkaido, Aomori, Ibaraki, Chiba, Kanagawa, Shizuoka, Aichi, Mie, Wakayama, Tokushima, Kochi, Oita, Miyazaki, Kagoshima, and Okinawa prefectures, and in Tokyo Metropolitan.¹⁵ Damages to aquaculture facilities were reported in Toyama, Ishikawa, Shizuoka, and Tottori prefectures. Damages to the fisheries sector cover damage to more than 20,700 fishing vessels and 319 fishery harbor facilities.

A compilation by USDA of cropland production statistics in the five coastal prefectures—Aomori, Iwate, Miyagi, Fukushima, and Ibaraki—indicates the importance of these prefectures to Japan’s agricultural sector (**Table 2**).¹⁶ USDA’s summary, using 2007 production data, shows that these five prefectures account for about one-fifth of Japan’s total marine fisheries and aquaculture production by volume, and 17% of all agricultural output by volume. These areas also account for similar shares of the nation’s rice, soybeans, vegetables, and livestock production, and also house 19% of Japan’s hog production, about one-tenth of all cattle and dairy herds, and about one-fifth of its poultry flocks.

Table 2. Agricultural and Fisheries Output, and Shares in Selected Prefectures

	All Japan	Aomori Share	Iwate Share	Miyagi Share	Fukushima Share	Ibaraki Share	Total Share
Marine fishery catch (1000 mt.)	4,397	4%	3%	6%	2%	4%	19.8%
Marine aquaculture (1000 mt.)	1,242	8%	5%	10%	0%	NA	23.5%
Agricultural output (100 billion yen)	83	3%	3%	2%	3%	5%	16.6%
Crops output (100 billion yen)	57	4%	2%	2%	3%	5%	16.4%
Vegetables (100 million yen)	21	3%	1%	1%	3%	7%	15.9%
Rice (1000 mt.)	8,823	3%	3%	4%	5%	5%	20.9%
Soybeans (1000 mt.)	262	3%	2%	6%	2%	3%	15.9%
Livestock (100 billion yen)	25	3%	5%	3%	2%	4%	17.0%
Dairy cattle (1000 head)	1,533	1%	3%	2%	1%	2%	9.4%
Beef cattle (1000 head)	2,890	2%	4%	3%	3%	2%	14.2%
Pigs (1000 head)	9,745	4%	4%	2%	2%	6%	19.3%
Layers (million chickens)	185	3%	3%	3%	3%	7%	18.5%
Broiler shipments (million chickens)	630	6%	16%	2%	1%	1%	25.5%

Source: USDA, Economic Research Service (ERS), “Japan: Current Issues in Japanese Agriculture,” Table 1, <http://www.ers.usda.gov/Briefing/Japan/currentissues.htm>. Data vary and are either 2007 or 2008.

Notes: 1 metric ton (mt) = 2,205 pounds. Assumes 1 dollar = 118 yen (2007), 103 yen (2008) (nominal).

¹⁵ Ibid.

¹⁶ USDA, Economic Research Service (ERS), “Japan: Current Issues in Japanese Agriculture,” Table 1, <http://www.ers.usda.gov/Briefing/Japan/currentissues.htm>.

Another report by the Netherlands-based Rabobank estimates the potential impact on some major food sectors, covering meat, dairy, seafood, fruits and vegetables, and grains and rice.¹⁷ The report states that the earthquake had no immediate effect on rice supply, given high year-end stocks; however, it noted possible concerns about soil contamination and its effect on future planting. The report notes that most of Japan's grain processing mills and soy-crushing plants are located outside the damage zone; other reports confirm that many of these facilities may remain operational.¹⁸ However, power shortages may temporarily affect processing operations. About 15% of Japan's compound feed industry capacity is estimated to have been damaged. The report notes that a significant portion of Japan's meat, poultry, and dairy production is located in northern coastal prefectures, and states that power shortages may have damaged supplies that were in cold storage. The report also notes widespread damage in the fisheries and aquaculture sectors, including damage to fishing ports and vessels, and to wild seedbeds for key products such as scallops and oysters.¹⁹ Also, seawater contamination is eroding consumer confidence in the country's fresh seafood catch. In addition to damage to vegetable farms and orchards in the coastal prefectures, the report notes growing concerns about radioactive contamination in locally produced vegetables and fruits.

Despite the current situation in Japan, food imports for consumption or for further processing have not stopped and many in-country food facilities continue to operate throughout the country.²⁰

Potential Radioactive Contamination

The Japanese government has been monitoring possible radioactive contamination of plant and animal products and tap water in some of the coastal prefectures as well as southern prefectures near the disabled Fukushima Daiichi Nuclear Plant. Testing has been conducted nearly daily since March 19, 2011, to detect possible radioactive contaminants on a wide range of plant and animal products, including fish.²¹ Testing for radioactive contaminants in foods is ongoing and spans many adjacent prefectures. Among the types of foods tested are spinach, lettuce, leeks, cabbage, cucumbers, strawberries, tomatoes, chives, broccoli, turnips, asparagus, eggplant, parsley, zucchini, celery, cabbage, melons, shiitake, wasabi, garland chrysanthemum and other locally grown produce, rapeseed, raw and pasteurized milk, poultry eggs, pork, sea cucumbers, blue mackerel, squid, flounder, and sardines.

The Japanese government has taken action to restrict the distribution of potentially contaminated foods. Starting in late March 2011, Japan's Ministry of Health, Labour and Welfare made a series of announcements restricting the distribution and consumption of foods produced in certain prefectures, including "non-head type leafy vegetables and head type leafy vegetables" (such as

¹⁷ Rabobank Food & Agribusiness Research and Advisory (FAR) Group, "Japan Earthquake: Magnitude of Impact on Food and Agriculture," <http://www.rabobank.com/content/research/FoodAndAgriResearch/>, as reported by Farms.com Ltd. ("Rabobank: Japan to import more ag products," April 7, 2011).

¹⁸ See, for example, Morton Sosland, "Japan's flour mills built to resist earthquakes," *Food Business News*, March 22, 2011; and the *Kiplinger Agriculture Letter*, March 25, 2011.

¹⁹ Farms.com Ltd., "Rabobank: Japan to import more ag products," April 7, 2011.

²⁰ See, for example, Tom Johnston, "U.S. exports to Japan remain strong," *Meatingplace*, March 23, 2011; Brian Salvage, "Smithfield: No declines in pork exports to Japan," *MeatPoultry*, March 28, 2011; and Cheryl Anderson, "U.S. Grain Experts Expect Quick Recovery to Trade," *The Progressive Farmer*, March 28, 2011.

²¹ Reports are posted by Japan's Ministry of Health, Labour and Welfare (MHLW), "Information about 2011 Tohoku-Pacific Ocean Earthquake," <http://www.mhlw.go.jp/english/topics/2011eq/index.html>.

spinach, komatsuna, cabbages) and any “flowerhead brassicas” (broccoli, cauliflower),²² and restrictions on spinach and kakina (a leafy vegetable), fresh raw milk,²³ certain shitake mushrooms,²⁴ and bamboo shoots and ostrich fern.²⁵ Many of these restrictions were later lifted.²⁶ Japan’s Ministry of Agriculture, Forestry and Fisheries (MAFF) further reports that radiation levels in meat and hen eggs (among other livestock products, including raw milk) and also floriculture products are within established safety levels.²⁷ Some press reports, however, indicate that livestock have been culled in the immediate area around the Fukushima nuclear plant.²⁸

Initially, the ministry noted that “in Fukushima Prefecture, there is no capability for coastal fishing in the sea area of the prefecture ... due to damage of the coast by the earthquake.” Japan’s Fisheries Agency stated that “fishery activities will not be resumed for a while in the sea area of Fukushima prefecture.”²⁹ In early April, Japan’s Ministry of Health, Labour and Welfare made additional announcements regarding possible contaminated fish products;³⁰ also, there were news reports that fisheries in some prefectures had ceased operations after contaminated fish were detected south of the Fukushima nuclear plant.³¹ By late April, the ministry had placed restrictions on the distribution and consumption of juvenile sand lance (a marine fish of the family Ammodytidae) harvested at Fukushima prefecture.³²

The situation is ongoing, and updates on the safety of Japan’s agricultural and fishery products are posted on a regular basis. For updated information, see the ministry’s website at <http://www.mhlw.go.jp/english/topics/2011eq/index.html>. This website also posts ongoing announcements and updates on radiation concerns regarding Japan’s tap water supplies, primarily in the Fukushima and Chiba prefectures.

Various news reports have noted the potential for radioactive contamination to affect several Japanese food production markets, including those for its fish and seafood, as well as global sushi markets; and Japan’s milk and dairy foods; produce; and beer, spirits, and bottled water.

²² MHLW, “Restriction of distribution and/or consumption of foods concerned in Fukushima and Ibaraki Prefectures,” March 23, 2011, <http://www.mhlw.go.jp/stf/houdou/2r98520000015wun-att/2r98520000015xym.pdf>.

²³ MHLW, “Handling Monitoring of Radioactive Contaminants for Agricultural and Livestock Products,” March 23, 2011, <http://www.mhlw.go.jp/english/topics/2011eq/dl/food-110323.pdf>.

²⁴ MHLW, “Restriction of distribution and/or consumption of log-grown Shiitake (outdoor cultivation) produced in parts of Fukushima Prefecture,” April 13, 2011, <http://www.mhlw.go.jp/english/topics/2011eq/dl/food-110413.pdf>.

²⁵ MHLW, “Restriction of distribution of Bamboo shoot and Ostrich fern produced in parts of Fukushima Prefecture,” May 9, 2011, <http://www.mhlw.go.jp/english/topics/2011eq/dl/food-110509.pdf>.

²⁶ MHLW, “Cancellation of Instruction to restrict distribution and consumption of food concerned produced in parts of Fukushima Prefecture, in relation to the accident at Fukushima Nuclear Power Plant,” May 18, 2011, <http://www.mhlw.go.jp/english/topics/2011eq/dl/food-110518.pdf>.

²⁷ MAFF, “Results of inspections on radioactivity levels in Livestock products,” April 27, 2011, <http://www.maff.go.jp/e/seisan/index.html>; and “Questions and answers on floricultural products,” April 18, 2011, http://www.maff.go.jp/e/quake/press_1104018-1.html.

²⁸ Dani Friedland, “Japan culls livestock around nuclear plant,” *Meetingplace.com*, May 13, 2011.

²⁹ Japan’s Fisheries Agency, “Questions and answers on fishery products,” http://www.jfa.maff.go.jp/e/q_a/index.html. Also see <http://www.jfa.maff.go.jp/e/inspection/index.html> for other testing and inspection reports.

³⁰ MHLW, “Handling of provisional regulation values for radioactive iodine in fishery products,” April 5, 2011, <http://www.mhlw.go.jp/english/topics/2011eq/dl/food-110405.pdf>; also MHLW, “Provisional remarks on radioactive iodine in fishery products,” April 8, 2011, http://www.mhlw.go.jp/english/topics/2011eq/dl/food-110408_2.pdf.

³¹ See, for example, Aya Takada, “Fishing Halted in Japan’s Ibaraki After Radioactive Water Contaminates Sea,” *Bloomberg* news online, April 6, 2011.

³² MHLW, “Restriction of distribution and consumption of Juvenile sand lance landed at Fukushima Prefecture,” April 20, 2011, <http://www.mhlw.go.jp/english/topics/2011eq/dl/food-110420.pdf>.

Possible Global Implications

Reports about possible radioactive contamination of food produced near the disabled Fukushima Daiichi Nuclear Plant have raised fears about the safety of Japan's food production, as well as concerns that radiation might reach the United States or U.S. territories in the Pacific. Many countries, including the United States, have instituted controls or banned Japanese food products from entering their countries.

As previously noted, Japan has been an important trading partner with the United States, particularly for U.S. exports. In 2010, the value of U.S. food exports to Japan totaled \$14.1 billion, making Japan our fourth-largest agricultural export market.³³

However, Japan accounts for a relatively small portion of the total U.S. market. The value of Japanese food exports to the United States totaled \$0.7 billion, less than 1% of the value of U.S. food imports.³⁴ The majority of imports (75% of the value in 2010) consisted of fish and Japanese prepared foods. Fresh seafood and also prepared fish and meat products accounted for about one-third of total imports from Japan.³⁵ These imports account for less than 2% of the seafood consumed in the United States.³⁶ Other leading imported products are prepared grain-based foods, including baked goods and pastas (12%),³⁷ and beverages, including rice wine and sake (7%).³⁸ Another leading import category is Japanese food preparations "not elsewhere specified" in the U.S. import codes, accounting for almost 20% of imports.³⁹

Effects on U.S. Food Supplies

To date, based on current available data, agencies in the United States claim that the situation in Japan does not pose a risk to U.S. food supplies. Similarly, international health organizations claim there is no evidence that radiation in Japan has contaminated food produced in any other country.⁴⁰

The U.S. Nuclear Regulatory Commission (NRC) further states that, based on current testing information, it does "not expect harmful levels of radiation to reach the West Coast, Hawaii, Alaska, or U.S. territories in the Pacific." Also, the NRC "does not expect that residents of the United States or its territories are at any risk of exposure to harmful levels of radiation resulting from the events in Japan."⁴¹ In addition to the NRC, other U.S. agencies are monitoring and

³³ Compiled by CRS, using data from the Global Trade Atlas, <http://www.gtis.com/gta/>. Harmonized System (HS) codes in chapters 01-22. Excludes food waste (HS 23) and tobacco products (HS 24).

³⁴ Compiled by CRS using data from the U.S. International Trade Commission (USITC), <http://dataweb.usitc.gov>. U.S. Harmonized Tariff Schedule (HTS) codes in chapters 01-22.

³⁵ HTS 03 (fish and crustaceans, molluscs and other aquatic invertebrates) and HTS 16 (edible preparations of meat, fish, crustaceans, molluscs or other aquatic invertebrates).

³⁶ Joint statement, "FDA, USDA, NOAA Statements on Food Safety," <http://www.fda.gov/NewsEvents/PublicHealthFocus/ucm248257.htm>.

³⁷ HTS 19 (preparations of cereals, flour, starch or milk; bakers' wares).

³⁸ HTS 22 (beverages, spirits and vinegar).

³⁹ HTS 21 (miscellaneous edible preparations), mostly HTS 2106909998 (food preparations not elsewhere specified or included, not canned or frozen).

⁴⁰ FDA, "Radiation Safety," <http://www.fda.gov/NewsEvents/PublicHealthFocus/ucm247403.htm#food>; and FAO/WHO consolidated statement, "Nuclear Emergency in Japan and Food Safety Concerns," <http://www.fao.org/crisis/japan/69718/en/>.

⁴¹ NRC, "Frequently Asked Questions About the Japan Nuclear Crisis," <http://www.nrc.gov/japan/faq-need-to>

assessing radiation released from the Japanese plants, including the Environmental Protection Agency (EPA) and the Department of Energy (DOE).

EPA is continuously monitoring the nation's air in all states and most territories, and is also regularly monitoring drinking water, milk, and precipitation at these sites for environmental radiation using its nationwide radiation monitoring system, RadNet.⁴² EPA's daily sampling data are posted at its website: <http://www.epa.gov/japan2011/data-updates.html>. To date, EPA's sampling of drinking water, precipitation, and milk, and its air monitoring, have consistently detected only "low levels of radioactive material below levels of public-health concern."⁴³ On March 30, 2011, EPA and FDA issued a joint statement:

Results from a screening sample taken March 25 from Spokane, WA detected 0.8 pCi/L of iodine-131, which is more than 5,000 times lower than the Derived Intervention Level set by FDA. These types of findings are to be expected in the coming days and are far below levels of public health concern, including for infants and children. Iodine-131 has a very short half-life of approximately eight days, and the level detected in milk and milk products is therefore expected to drop relatively quickly.⁴⁴

Again, on May 3, EPA stated: "all of the radiation levels detected by RadNet monitors and sampling have been very low, are well below any level of public health concern, and continue to decrease over time."⁴⁵

The Centers for Disease Control and Prevention (CDC) have posted information to address consumer concerns about iodine-131 detected in milk and in surface water supplies.⁴⁶

know.pdf.

⁴² EPA, "Japanese Nuclear Emergency: Radiation Monitoring," <http://www.epa.gov/japan2011/>. See map on national monitoring sites. Also see EPA's "Frequently Asked Questions," <http://www.epa.gov/radiation/>.

⁴³ Results for April 7, 2011. EPA, "Daily Data Summary," <http://www.epa.gov/japan2011/data-updates.html>. Also see EPA, "EPA Monitoring Continues to Confirm That No Radiation Levels of Concern Have Reached the United States," March 28, 2011; and Joint EPA/DOE statement, "Radiation Monitors Confirm That No Radiation Levels of Concern Have Reached the United States," March 18, 2011. Also see CRS Report R41728, *The Japanese Nuclear Incident: Technical Aspects* (specifically, section titled "Could Harmful Levels of Fallout Reach the United States?").

⁴⁴ Joint FDA/EPA statement, "Update on Ongoing Monitoring," March 30, 2011, <http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm249146.htm>.

⁴⁵ EPA, "Japanese Nuclear Emergency: Radiation Monitoring," <http://www.epa.gov/japan2011/>. Also see EPA Administrator Lisa Jackson's testimony before the Senate Environment and Public Works Subcommittee on Clean Air and Nuclear Safety, April 12, 2011, http://epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore_id=016b87a4-114b-4588-b2fc-99dc6569edff.

⁴⁶ CDC, "Frequently Asked Questions About Iodine-131 Found in Milk," http://emergency.cdc.gov/radiation/isotopes/iodine131andmilk_faq.asp; and "Frequently Asked Questions About Iodine-131 Found in Surface Water," <http://emergency.cdc.gov/radiation/isotopes/iodine131surfacewater.asp>. For additional health-related information, contact Stephen Redhead, CRS Specialist in Health Policy.

Reports by some West Coast states, including California and Washington, also downplay potential risks based on ongoing radiologic monitoring in these states. The California Department of Public Health reports that “all data from state and federal sources show that harmful radiation won’t reach California.”⁴⁷ These findings underlie claims by industry representatives of the Western Growers and Produce Marketing Association that there is no threat to California’s produce industry.⁴⁸ Washington State Department of Health officials also claim they “aren’t seeing significant levels of radioactivity in our state, and there’s no health risk.”⁴⁹

Regarding fish and seafood, FDA, EPA, and the National Oceanic and Atmospheric Administration (NOAA) issued a joint statement claiming these three agencies “have high confidence in the safety of seafood products in the U.S. marketplace or exported U.S. seafood products ... The only Japanese fish with levels of radiation exceeding standards is the Japanese sand lance, which does not migrate away from the Japanese coast.”⁵⁰

The joint statement further highlighted that, “[t]o date, no significantly elevated radiation levels have been detected in migratory species,” such as the juvenile North Pacific albacore tuna and the North American Pacific salmon. These agencies also reported “only one seafood species, the Japanese sand lance, with levels of radiation exceeding standards.”⁵¹ Although FDA has not detected any longer-lived radionuclides in any fish imported from Japan, it is continuing to monitor fish caught in Japan’s prefectures surrounding the damaged nuclear power plant. About 2% of the seafood consumed in the United States is imported from Japan.⁵²

Trade Considerations

International Activities

Following the initial reports about possible radioactive contamination of foods, many countries increased their surveillance of food imports from Japan. In addition to the United States, others with heightened import surveillance measures include the European Union, Canada, Australia, New Zealand, and India, as well as most Asian nations, such as China and Hong Kong, Indonesia, Malaysia, the Philippines, Singapore, South Korea, Taiwan, Thailand, among others. Import restrictions vary by country but broadly cover milk and milk products, vegetables and fruit, and seafood and meat from those prefectures with a perceived risk of contamination, specifically Fukushima, Ibaraki, Tochigi, and Gunma.

Several international organizations are monitoring concerns about the safety of food produced in Japan. These include the various organizations of the United Nations, including the World Health Organization (WHO), the Food and Agriculture Organization (FAO), the Joint FAO/WHO Codex

⁴⁷ CDPH, “FAQs About Radiation,” <http://www.cdph.ca.gov/pages/radiationfaqs2011.aspx>.

⁴⁸ Dan Flynn, “CA says no threat of radiation in leafy greens,” *Food Safety News*, March 25, 2011.

⁴⁹ Washington State Department of Health, “Frequently Asked Questions: How the nuclear reactor event affects Washington,” <http://www.doh.wa.gov/topics/japan-faq.htm>. Also see press release by Governor Gregoire, “Gov. Gregoire’s statement on ongoing radiological monitoring,” March 30, 2011, <http://www.governor.wa.gov/news/news-view.asp?pressRelease=1682&newsType=1>.

⁵⁰ Joint statement by FDA/EPA/NOAA, “U.S. Seafood Safe and Unaffected by Radiation Contamination from Japanese Nuclear Power Plant Incident; U.S. Monitoring Control Strategy Explained,” May 3, 2011, http://www.nmfs.noaa.gov/mediacenter/docs/2011/may/seafoodsafetyfactsheet_03may2011.pdf.

⁵¹ Ibid.

⁵² Joint statement by FDA/USDA/NOAA, “FDA, USDA, NOAA Statements on Food Safety,” March 23, 2011, <http://www.fda.gov/NewsEvents/PublicHealthFocus/ucm248257.htm>.

Alimentarius Commission, the International Food Safety Authorities Network (INFOSAN), and also the International Atomic Energy Agency (IAEA).⁵³ These organizations help oversee the rules for radioactivity in foods for international trade, as agreed to within the Codex “Guideline Levels” (GLs) for radionuclide levels in internationally traded food following a nuclear or radiological emergency.⁵⁴ Other joint U.N. activities include “international guidance related to nuclear preparedness and response to nuclear or radiological events, including application of appropriate agricultural countermeasures.”⁵⁵

These international organizations acknowledge that recent reports of radioactivity in food in Japan suggest that “some foods produced in Japan are likely to be contaminated by radioactive material at levels unsuitable for human consumption.”⁵⁶ The primary contaminant detected in some food samples include radioactive iodine; however, radioactive cesium has also been detected in some foods.⁵⁷ Radioactive iodine is relatively short-lived with a half-life of about one week and decays naturally within a few weeks. However, if ingested and accumulated in the body, radioactive iodine has been associated with certain types of cancers.⁵⁸ Radioactive cesium is longer-lived and can remain in the environment for a long time; also, because radioactive cesium can be relatively quickly transferred from feed to milk, its uptake into food production can pose longer-terms risks and public health effects.⁵⁹

U.S. Activities

In the United States, food imports are regulated by FDA, which monitors the safety of most types of food imports, and USDA’s Food Safety and Inspection Service (FSIS), which regulates the safety of meat and poultry imports.⁶⁰ In addition, USDA’s Animal and Plant Health Inspection Service (APHIS) is responsible for protecting plant and animal resources from domestic and foreign pests and diseases, and the Department of Homeland Security (DHS) is responsible for coordinating agencies’ food security activities, including border inspections by the U.S. Customs and Border Protection (CBP).

Following reports about radioactive contamination of milk and leafy greens, FDA issued “Import Alert 99-33” for milk, vegetables, and certain fish species (sand lance) produced or manufactured

⁵³ See, for example: WHO, “FAQs: Japan nuclear concerns,” <http://www.who.int/hac/crises/jpn/faqs/en/index7.html>; FAO, “United Nations system response,” <http://www.fao.org/crisis/japan/en/>; FAO/WHO statement, “Nuclear Emergency in Japan and Food Safety Concerns,” <http://www.fao.org/crisis/japan/69718/en/>,” and IAEA, “Fukushima Nuclear Accident Update Log,” <http://www.iaea.org/newscenter/news/tsunamiupdate01.html>.

⁵⁴ GLs are published by Codex. See “Codex General Standard For Contaminants And Toxins In Food And Feed,” Codex Stan. 193-1995, 1995, http://www.codexalimentarius.net/download/standards/17/CXS_193e.pdf.

⁵⁵ FAO, “United Nations system response,” <http://www.fao.org/crisis/japan/en/>; and Joint FAO/IAEA statement, “Emergency Preparedness & Response,” <http://www-naweb.iaea.org/nafa/emergency/index.html>.

⁵⁶ Joint WHO/FAO/IAEA statement, “Questions & Answers on the Nuclear Emergency in Japan and Food Safety Concerns,” <http://www-naweb.iaea.org/nafa/faqs-food-safety.html>.

⁵⁷ Joint FAO/WHO statement, “Nuclear Emergency in Japan and Food Safety Concerns,” <http://www.fao.org/crisis/japan/69718/en/>.

⁵⁸ INFOSAN, “Information on Nuclear accidents and radioactive contamination of foods,” March 2001, http://www.who.int/foodsafety/fs_management/INFOSAN_note_Radionuclides_and_food_300311.pdf. Also see NRC, “Fact Sheet on Biological Effects of Radiation,” <http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/bio-effects-radiation.html>; and CRS Report R41728, *The Japanese Nuclear Incident: Technical Aspects* (specifically, section titled “Health Effects of Ionizing Radiation”).

⁵⁹ Ibid. For additional health-related information, contact Stephen Redhead, CRS Specialist in Health Policy.

⁶⁰ CRS Report CRS Report RL34198, *U.S. Food and Agricultural Imports: Safeguards and Selected Issues*; and CRS Report RS22600, *The Federal Food Safety System: A Primer*.

in selected Japanese prefectures.⁶¹ This import alert has been modified several times; for the most recent version see FDA's website: http://www.accessdata.fda.gov/cms_ia/importalert_621.html.⁶²

FDA's Import Alert 99-33 establishes an order for "detention without physical examination" (DWPE) for specified products from specified prefectures. Accordingly, FDA's import alert detains all shipments of items subject to the alert, and places the burden upon the importer to demonstrate, through testing, that a given shipment is "not violative" and may be imported. For additional information about DWPE and FDA's authority, see the text box below.

As of May 17, 2011, FDA's Import Alert 99-33 has reduced the area of concern to three prefectures: Fukushima, Ibaraki, and Tochigi. It applies to food products from Japan in four categories:⁶³

- **Category 1.** Products that the government of Japan has restricted for sale or export will be prevented from entering the United States. These products cannot gain entry by providing sample results. As of May 17, 2011, these include (1) spinach, lettuce, celery, cress, endive, escarole, chard, collards, and other head-type leafy vegetables from the Fukushima prefecture; (2) turnips and other non-head type leafy vegetables, as well as broccoli, cauliflower, flower head brassicas (i.e., broccoli and cauliflower), mushrooms, bamboo shoots, and Ostrich fern from the Fukushima prefecture; (3) sand lance from the Fukushima prefecture; (4) milk from the Fukushima and Ibaraki prefectures; (5) spinach and kakina from the Fukushima and Ibaraki prefectures.
- **Category 2.** Products from the Fukushima, Ibaraki, and Tochigi prefectures that the government of Japan has not currently banned for sale or export. These include dairy products and fresh produce. Under Import Alert 99-33, authorities may detain these products when they arrive in the United States. Authorities will release these products from detention if the importer can show the products are compliant.
- **Category 3.** Food and feed products not covered by FDA's Import Alert 99-33 that come from these three Japanese prefectures: Fukushima, Ibaraki, and Tochigi. FDA will examine these products, and conduct sampling and testing as needed, to determine if they are safe to enter the United States.
- **Category 4.** All other FDA-regulated food products from Japan that are not listed in Import Alert 99-33 and do not belong to one of the other categories. Authorities will review these products using standard procedures, and as part of this may monitor and sample products as resources permit.

It is unclear how the recent series of cancellations of "instruction to restrict distribution" and/or "consumption"⁶⁴ by the government of Japan influences the import alert, particularly for Category 1 products.

⁶¹ FDA, "Detention Without Physical Examination of Products from Japan Due to Radionuclide Contamination," Import Alert 99-33, http://www.accessdata.fda.gov/cms_ia/importalert_621.html. All U.S. alerts for Japan are at http://www.accessdata.fda.gov/cms_ia/country_JP.html.

⁶² This import alert was first issued on March 22, and was subsequently revised on March 25, April 12, April 15, and April 20, April 21, and May 17.

⁶³ FDA, "Radiation Safety," <http://www.fda.gov/newsevents/publichealthfocus/ucm247403.htm#importjapan>.

⁶⁴ See, for example, MHLW, "Cancellation of Instruction to restrict distribution and consumption of food concerned produced in parts of Fukushima Prefecture, in relation to the accident at Fukushima Nuclear Power Plant," May 18,

Detention Without Physical Examination (DWPE)⁶⁵

FDA has primary responsibility for the safety of most domestic and imported foods (with the exception of meat and poultry products) under the Federal Food, Drug, and Cosmetic Act (FFDCA), as amended (21 U.S.C. §§ 301 et seq.). The FFDCA requires that all such foods be safe, wholesome, and accurately labeled.

Importers of foreign food are responsible for verifying that the products obtained from foreign processors are in compliance with U.S. laws. FDA's surveillance of imported foods consists of reviews of prior notice data, reviews of customs entry forms, physical or sensory analysis, sample collections for laboratory analysis, and detention without physical examination (DWPE).

Prior to importation, FDA must have received a notice for articles of food being imported or offered for import into the United States. Prior notice is required to enable the food to be inspected at U.S. ports of entry, and FDA must refuse admission to food imported or offered for import if the notice was not submitted or if the notice was deficient. Additionally, FDA may hold food at the port of entry if it is imported or offered for import by a person who was debarred under the FFDCA or if it was imported or offered for import from a foreign facility that has not registered with the FDA. FDA screens the electronic shipping records of all imported food products before they enter the United States. From these records, the agency selects products for physical examination and/or testing to determine whether they contain adulterants.

Under the FFDCA, FDA has the authority to refuse entry of any food import if it appears to be adulterated, misbranded, or in violation of U.S. law. Generally, the FFDCA provides that a food article must be refused admission into the United States, with some exceptions, "if it appears from the examination of such samples or otherwise" that it has been "manufactured, processed, or packed under insanitary conditions," or it is "forbidden or restricted in sale in the country in which it was produced or from which it was exported," or it is "prohibited from introduction or delivery for introduction into interstate commerce under section 301(II)" (FFDCA § 801(a)).

FDA actions on imported products are implemented through FDA "Import Alerts," which may require DWPE. DWPE, formerly known as "automatic detention," was developed to address recurrent violations. DWPE is based on FDA's statutory authority to refuse admission of any product that "appears" from examination "or otherwise" to be violative. DWPE means that a product is refused entry on the basis of certain information regarding either past history of violations from a particular producer or country or other information indicating that the product may be violative, such as certain known contamination. FDA detains all shipments of items subject to the import alert and places the burden upon the importer to demonstrate, through testing, that a given shipment is not violative and may be imported. If the importer cannot demonstrate that the product is not violative, the importer may be able to recondition the product, or the product may otherwise be re-exported or destroyed.

Given historically low import inspection rates of food by FDA, some groups want FDA to issue an import alert for all food and seafood imported from Japan.⁶⁶

Regarding meat and poultry products, USDA points out that because of USDA's import equivalency requirements and other trade-related concerns, Japan has not exported any beef products to the United States since early 2010, and Japan is not currently eligible to export any poultry products or processed egg products to the United States.⁶⁷

2011, <http://www.mhlw.go.jp/english/topics/2011eq/dl/food-110518.pdf>, and other cancellations at <http://www.mhlw.go.jp/english/topics/2011eq/index.html>.

⁶⁵ Sources: FDA, "Detention without Physical Examination," <http://www.fda.gov/ICECI/ComplianceManuals/RegulatoryProceduresManual/ucm179271.htm>; and Linda Horton, "U.S. FDA Authority over Imports," <http://www.hoganlovells.com/files/Publication/a279dfd1-c81e-464e-a4f0-b26b6da16f29/Presentation/PublicationAttachment/4511545b-3ab8-4982-a2f6-ccfa2990c0a8/Horton.pdf>. For more information on FDA's authority, contact CRS Legislative Attorney Vanessa Burrows.

⁶⁶ See, for example, "FDA Should Issue Import Alert for All Japanese Food Imports; Food and Water Protections Must Remain Priority in Washington," Statement from Wenonah Hauter, Food & Water Watch, March 23, 2011.

⁶⁷ Ibid.

Some in Congress remain concerned that contaminated foods might enter the United States through its food imports.⁶⁸ Both FDA and USDA have taken steps to address the current situation in Japan. FDA has stated: “FDA’s screening at U.S. borders will remain vigilant and will be augmented with radiation screening of shipments” and its import tracking system “has been programmed to automatically flag all shipments of FDA-regulated products from Japan.”⁶⁹ USDA has stated that “USDA and its federal partners through the Food Emergency Response Network are preparing to begin sampling, if necessary.”⁷⁰ Prior notification to FDA of food imports into the United States is required under the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (P.L. 107-188; 42 U.S.C. 300i), which allows the agency to readily identify and track food shipments from Japan.

Enhanced import security measures by FDA and USDA, in conjunction with existing CBP border inspections, are intended to address concerns about possible contaminated food imports from Japan. As noted by USDA, CBP is “responsible for monitoring for the presence of radiological materials in cargo shipments coming into the United States at all U.S. ports of entry. This monitoring is a regular part of inspection procedures carried out at every port of entry nationwide;” FDA also notes that CBP officers “routinely use radiation detection equipment to screen food imports, cargo, and travelers.”⁷¹

Finally, existing U.S. trade laws, such as general requirements under the Tariff Act of 1930 (19 U.S.C. 1304), require all imported articles to be marked with the English name of the country of origin.⁷² Other labeling requirements also apply under other laws that govern both FDA and USDA. For example, FDA requirements under the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 *et seq.*) require that a food label must contain specified information. However, as noted by FDA: “The law does not specifically require that the country of origin statement be placed on the PDP [the principal display panel, PDP, or the label panel], but requires that it be conspicuous.”⁷³ Certain labeling requirements for meat and poultry products are also required within laws administered by FSIS, including the Federal Meat Inspection Act (21 U.S.C. 601 *et seq.*) and the Poultry Products Inspection Act (21 U.S.C. 451 *et seq.*). Only plants in countries certified by USDA to have inspection systems equivalent to those in this country are eligible to export products to the United States. Regulations issued under these laws have required that country of origin appear in English on immediate containers of all meat and poultry products entering the United States.⁷⁴ Other USDA-administered programs also provide for additional country-of-origin requirements for certain types of foods.⁷⁵

⁶⁸ Press release by Representative Rosa L. DeLauro, “DeLauro Calls for FDA Testing of Imported Japanese Products,” March 22, 2011, <http://delauro.house.gov/release.cfm?id=3075>; also see “DeLauro Wants All Japanese Food Bound for the U.S. Tested,” *CQ Health Beat*, March 23, 2011.

⁶⁹ FDA, “Radiation Safety,” <http://www.fda.gov/NewsEvents/PublicHealthFocus/ucm247403.htm>.

⁷⁰ USDA, “USDA’s Radiation Safety Questions and Answers,” http://www.usda.gov/wps/portal/usda/%20usdahome?contentidonly=true&%20contented=radiation_safety_qa.html.

⁷¹ USDA, “USDA’s Radiation Safety Questions and Answers,” March 22, 2011; and FDA, “Radiation Safety,” <http://www.fda.gov/NewsEvents/PublicHealthFocus/ucm247403.htm#food>.

⁷² Customs and Border Protection’s Guidance is at <http://www.fda.gov/ICECI/ComplianceManuals/CompliancePolicyGuidanceManual/ucm074567.htm>. See regulations at 19 CFR 134.

⁷³ 21 CFR 101. See FDA, “Guidance for Industry: A Food Labeling Guide,” October 2009, <http://www.fda.gov/Food/GuidanceComplianceRegulatoryInformation/GuidanceDocuments/FoodLabelingNutrition/FoodLabelingGuide/ucm064872.htm>.

⁷⁴ Regulations are at 9 C.F.R. 327.14 and 9 C.F.R. 381.205.

⁷⁵ Includes (1) Country of Origin Labeling (COOL); see CRS Report RS22955, *Country-of-Origin Labeling for Foods*; and (2) Perishable Agricultural Commodities Act (PACA) of 1930 and the Produce Agency Act of 1937 (7 U.S.C. §

499a et seq., and §1622, respectively); see CRS Report RL32746, *Fruits, Vegetables, and Other Specialty Crops: A Primer on Government Programs*.

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